

3084

B.Tech. (Civil) 4th Semester (G Scheme)  
Examination, July-2022  
MATERIAL TESTING AND EVALUATION  
Paper- PCC-CE-210-G

*Time allowed : 3 hours]*

*[Maximum marks : 75*

**Note:** Attempt five questions selecting one question from each unit. Question no. 1 is compulsory.

1. Define any six of the following:- 6×2.5=15
- (i) Differentiate between PCC and RCC.
  - (ii) Define High alumina cement.
  - (iii) Define Rapid hardening portland cement.
  - (iv) Define Fire resistance of concrete.
  - (v) Classify aggregates.
  - (vi) Define elasticity and plastic deformation.
  - (vii) Define elastic deformation.
  - (viii) Name various heavy construction equipments.

**Unit-I**

2. (a) Name and explain the various physical properties of cement. 8
- (b) Write down various advantages and disadvantages of concrete. 7

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3. (a) Explain in detail classification of lime on the basis of their composition and preparation along with their properties. 10
- (b) What are the various uses of lime? 5

### Unit-II

4. (a) Define Workability. Explain various factors affecting workability.
- (b) What are the requirements of workability? 5
5. Describe the principles of concrete mix design. What are the different factors on which selection of a mix design depends? Also explain the variation of concrete strength. 15

### Unit-III

6. (a) Explain the different types of steel. 7.5
- (b) Write a short note on mechanical behavior and mechanical characteristics of steel. 7.5
7. (a) What are the various tests that can be conducted on a steel rod? Explain the tensile test on a steel rod in detail. 9
- (b) Write short note on any one tests of steel:- 6
- (i) Bending test
- (ii) Torsion test



## Unit-IV

8. (a) Explain in detail elastic and plastic deformation of materials. 8
- (b) Define the following terms:- 7
- (i) Fatigue of material
  - (ii) Shrinkage
  - (iii) Creep
9. (a) What do you understand by term heavy construction? Also explain the precautions taken care during the construction of bridges in detail. 10
- (b) Write a short note on " Hot mix plant". 5